# POLYREY HPL® - High Pressure Laminate
PRODUCT DATA SHEET

## 1. MATERIAL DESCRIPTION AND COMPOSITION

POLYREY HPL® is a decorative high-pressure laminate (HPL) for interior fittings and furniture according to EN 438-3 and ISO 4586.

POLYREY HPL® consists of layers of fibrous cellulose (usually papers) impregnated with thermosetting resins. The process, defined as a simultaneous application of heat and high specific pressure, enables flowing and subsequent curing of the thermoset resins to obtain a homogenous non-porous material with the required surface finish.

Basically, more than 60% of the POLYREY HPL® consists of paper and the remaining 30 to approximately 40% consist of cured phenol-formaldehyde resin for core layers and melamine-formaldehyde resin for the decorative top layer.

POLYREY HPL® is available in a variety of dimensions, thicknesses, and textures. The core is a phenolic brown standard core for HPL type HGS/VGS/HGP/VGP. If a fire retardant HPL (type HGF/VGF) is required, the brown laminate core may be treated with a halogen-free additive.
This product data sheet covers the product POLYREY HPL® Standard (STD), postforming (POS) and flame-retardant (FIR).

POLYREY HPL® benefits from antibacterial treatment (Sanitized Silver borophosphate glass), complementary to cleaning and disinfection protocols. Antibacterial property contributes to surface hygiene by reducing microbial contamination.


1 Decor paper/overlay, melamine resin impregnated
2 Core paper (kraft paper), phenol resin impregnated

## 2. FORMATS

- 215 x 97 cm
- 245 x 124 cm
- 307 x 124 cm
- 307 x 132 cm
- 412 x 132 cm
- 412 x 151 cm

Full details of the availability of decors in different formats are available on our website www.polyrey.com or in our infoGuide brochure.

## 3. AREAS OF APPLICATION

POLYREY HPL® is a decorative high-pressure laminate (HPL) for interior fittings and furniture.

*Table 1: Classification system and typical applications (source EN438-3)*

| PERFORMANCE CATEGORY | FINISHES | NUMERICAL CLASSIFICATION INDEX NUMBERS | | | EQUIVALENT ALPHABETICAL CLASSIFICATION | EXAMPLES OF TYPICAL APPLICATIONS (1) |
|---|---|---|---|---|---|---|
| | | Wear resistance (Revolutions) | Impact resistance (N) | Scratch resistance (Rating) | | |
| High resistance to surface<br><br>high resistance to impact<br><br>high resistance to scratching | All except perlescents, backing, EPM, CUIR, ALLIAGE | 3<br><br>(≥150) | 3<br><br>(≥20) | 3<br><br>(all finishes ≥3 except Bri HG and EXM ≥2) | HGS (horizontal general-purpose standard)<br><br>HGF (horizontal general-purpose flame-retardant)<br><br>HGP (horizontal general-purpose postforming) | kitchen- and office worktops<br><br>restaurant- and hotel desks<br><br>doors and wall cladding in public spaces<br><br>Interior wall<br><br>claddings for public transport (trains, buses)<br><br>Shipbuilding |
| Medium resistance to surface wear<br><br>medium resistance impact<br><br>medium resistance scratching | perlescents, backing, EPM, CUIR, ALLIAGE | 2<br><br>(≥50) | 2<br><br>(≥15) | 2<br><br>(≥2) | VGS (vertical general-purpose standard)<br><br>VGF (vertical general-purpose flame-retardant)<br><br>VGP (vertical general-purpose postforming) | Front elements for kitchens<br><br>office- and bathroom furniture<br><br>wall cladding<br><br>ceilings<br><br>Shelves<br><br>furniture elements |

1) The examples indicate typical applications of POLYREY HPL®. The application of POLYREY HPL® depends on several factors (e.g. temperature, relative humidity, change in climatic conditions, fasteners, fire behavior requirements, etc.). Therefore, the suitability of POLYREY HPL® for the respective application must be checked in advance.

For applications in damp environments, POLYREY HPL® panels are not resistant to continuous exposure to moisture, and must be able to dry continuously. Otherwise, surface blistering may occur.

In addition, certain surface finishes require special conditions of application and use.
Always refer to §8 Cleaning and care.
For example, matt surfaces combined with dark decors can leave visible marks and are more sensitive to soiling: light decors are recommended for intensive applications.
Particular attention should be paid to matt and textured surfaces: Alloy, Extramat, Roche. The usual surface alterations will be more visible, such as micro-scratches and variations in gloss, and accentuated in combination with dark decors.
Note – Noir ROCHE: repeated rubbing of its surface can produce visible changes, including a whitened appearance, discoloration and polished peaks.
The product retains its normative technical characteristics.

# 4. TECHNICAL DATA

## 4.1. TECHNICAL PROPERTIES ACCORDING TO EN 438-3

*Table 2: Technical properties according to EN 438-3*

| PROPERTY | TEST METHOD EN 438-2: 2016 | UNIT | HGS-HGF-HGP | VGS-VGF-VGP |
|---|---|---|---|---|
| **Physical properties, dimensions and tolerances** | | | | |
| Density | EN ISO 1183-1 | g/cm³ | ≥1.35 | |
| Thickness | EN 438-2-5 | mm | 0.5≤ t ≤1.0 ± 0.10<br>1.0< t <2.0 ± 0.15 | |
| Length and width | EN 438-2-6 | mm | +10 / -0 | |
| Edge straightness | EN 438-2-7 | mm/m | ≤1.5 | |
| Edge squareness | EN 438-2-8 | mm/m | ≤1.5 | |
| Edge quality | EN 438-2-4 | | Visual defects can be present on all four edges - defect-free length and width at least nominal size minus 20 mm | |
| Flatness | EN 438-2-9 | mm/m | ≤60 | |
| Dimensional stability at elevated temperature | EN 438-2-17 | Longitudinal - %<br>Transverse - % | ≤0.55<br>≤1.05 | ≤0.75<br>≤1.25 |
| **Mechanical properties** | | | | |
| Resistance to immersion in boiling water | EN 438-2-12 | Rating (1) | BRI HG ≥3<br>Other surfaces ≥4 | |
| Resistance to impact by small-diameter ball | EN 438-2-20 | N | ≥20 | ≥15 |
| Resistance to impact by large-diameter ball (optional) | EN 438-2-21 | Drop height mm<br>Indent diameter mm | ≥800<br>≤10 | ≥600<br>≤10 |
| Resistance to cracking under stress | EN 438-2-23 | Rating (2) | ≥4 | |
| **Surface properties** | | | | |
| Dirt, spots etc.<br>Fibers, hairs and scratches | EN 438-2-4 | mm²/m²<br>mm/m² | ≤1,0<br>≤10 | |
| Resistance to surface wear | EN 438-2-10 | Number of revolutions<br>Initial abrasion point | Granit ≥350<br>Others ≥150 | EPM ≥100<br>Others ≥50 |
| Resistance to water vapor | EN 438-2-14 | Rating (1) | BRI HG ≥3<br>Other surfaces ≥4 | |
| Resistance to dry heat (180 °C) | EN 438-2-16 | Rating (1) | BRI HG ≥3<br>Other surfaces ≥4 | |
| Resistance to wet heat (100 °C) | EN 438-2-18 | Rating (1) | BRI HG ≥3<br>Other surfaces ≥4 | |
| Resistance to scratching | EN 438-2-25 | Rating (3)<br>BRI HG, ALG, EXM<br>Other surfaces | ≥2<br>≥3 | ≥1<br>≥2 |

| PROPERTY | TEST METHOD EN 438-2: 2016 | UNIT | HGS-HGF-HGP | VGS-VGF-VGP |
|---|---|---|---|---|
| Resistance to staining | EN 438-2-26 | Rating (1)<br>Group 1 and 2<br>Group 3 | 5<br>≥4 | |
| Light fastness (xenon arc) | EN 438-2-27 | Grey scale rating | 4 to 5 | |
| **Postforming properties for laminate type HGP/VGP** | | | | |
| Postformability | EN 438-2-31 or 32 | Radius (mm)<br>Longitudinal (L)<br>Traverse (T) | ≥10x laminate nominal thickness<br>≥20x laminate nominal thickness | |
| Minimum bending radius (concave, convex) | | mm | 200 | |

HGS/HGF/HGP: H (horizontal grade), G (general purpose), S (standard grade), F (flame-retardant grade), P (postformable grade)
VGS/VGF/VGP: V (vertical grade), G (general purpose), S (standard grade), F (flame-retardant grade), P (postformable grade)

(1) Rating 5: no change; Rating 4: slight change visible at certain viewing angles; Rating 3: moderate change; Rating 2: marked change or surface blistering; Rating 1: Surface layers delamination

(2) Rating 5: No cracking; Rating 4: Hairline cracks; Rating 3: Cracks visible; Rating 2: A crack visible from the edge of the hole, extending to one edge of the specimen such that the specimen is not broken into two pieces; Rating 1: Specimen broken into two pieces.

(3) ≥ 90% continuous double circle of scratch marks clearly visible- Rating 1: 1N; Rating 2: 2N; Rating 3: 4N; Rating 4: 6N; Rating 5: > 6N

Additional information regarding product quality (standard/postforming/flame-retardant) and application (horizontal/vertical) is also available on our website www.polyrey.com

## 4.2. ADDITIONAL TECHNICAL PROPERTIES AND SAFETY INFORMATION

*Table 3: Additional technical properties*

| PROPERTY | DESCRIPTION |
|---|---|
| **Physical and chemical properties** | |
| Physical state | Solid |
| Solubility | Insoluble in water, oil, methanol, diethyl ether, n-octanol, acetone |
| Boiling point | None |
| Evaporation rate | None |
| Melting point | POLYREY HPL® does not melt |
| Calorific value | 18–20 MJ/kg |
| Heavy metals | POLYREY HPL® contains no toxic compounds based on<br>Antimony, barium, cadmium, chromium III, chromium VI, lead, mercury, selenium |
| Bisphenol A (BPA) | POLYREY HPL® contains no components |
| Asbestos | POLYREY HPL® contains no components |
| Pentachlorphenol (PCP) | POLYREY HPL® contains no components |
| RoHS | POLYREY HPL® meets the requirements of EU guidelines 2011/65, 2015/863 RoHS (Restriction of Hazardous Substances).<br>POLYREY HPL® contains none of the following restricted substances:<br>lead, mercury, cadmium, chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ether (PBDE), pentabromodiphenyl ether (PentaBDE), octabromodiphenyl ether (OctaBDE);<br>Bis(2-ethylhexyl)phthalate (DEHP) butyl benzyl phthalate (BBP) dibutyl phthalate (DBP) diisobutyl phthalate (DIBP) |
| BPR – Biocidal Product Regulation | POLYREY HPL® complies with Biocidal Regulation EU Nr. 528/2012 |
| Safety data sheet | POLYREY HPL® boards are not hazardous substances within the meaning of the Chemicals Act / no special labelling or safety data sheet is required |
| **Stability and reactivity information** | |
| Stability | POLYREY HPL® is stable and durable; it is neither reactive nor corrosive |
| Hazardous/dangerous reactions | None |
| Incompatibility | Strong acids or alkaline solutions may damage the surface |
| **Fire and explosion protection data** | |
| Ignition temperature | approx. 400 °C |
| Flashpoint | None |
| Thermal decomposition | Possible above 250 °C. Toxic gases (e.g., carbon monoxide, carbon dioxide, ammonia) may arise depending on the fire conditions (temperature, oxygen content, etc.) |

| PROPERTY | DESCRIPTION |
|---|---|
| Smoke and toxicity | POLYREY HPL® can be used in areas where smoke and toxicity is controlled (e.g., railway construction and shipbuilding) |
| Flammability | POLYREY HPL® is classified as non-flammable. It only burns in real fires in which open flames are present. |
| Extiguishing agent | Class A |
| Explosion hazards | Dust class ST-1 |
| Explosion limits | Maximum dust concentration 60mg/m³ |
| Electrostatic behavior | It mimimizes the generation of charge by contact-separation or rubbing with another material. It does not need to be earthed. Surface resistivity is between $10^9$-$10^{12}$ ohms and a chargeability of V < 2 kV according to DIN EN 61340-4-1 is V < 2 kV. Thus, POLYREY HPL® is an antistatic material. |

## 5. CERTIFICATIONS AND TESTS

*Table 4: Certifications and test reports*

| PROPERTY | TEST METHOD | UNIT | HGS-HGF-HGP | VGS-VGF-VGP |
|---|---|---|---|---|
| Fire behavior Building product (4) | EN 13501-1 | Building material class | HGF/VGF: B-s2, d0 (wood-based substrate FR (chipboard)) HGS/HGP: D-s2, d0 (CWFT (5)) | |
| Fire behavior Transportation trains | EN 45545-2 | Class | HGF/VGF: HL 2 0.8mm – ≤2.0mm | |
| Fire behavior Transportation motor vehicle | ECE R1118 annex 7 & 8 | | HGS/VGS 0.6mm – ≤1.2mm Pass | |
| Fire behavior Shipbuilding | IMO Resolution MSC 307(88) | Module B, Module D, Declaration of Conformity MED (DOC) | HGS/HGP/VGS/VGP thickness 0.8mm-1.0 mm | |
| Emission VOC (Volatile organic compounds) | ISO 16000-9 | Emission class according to French regulation (Décret no 2011-321) | A (scenario wall) A+ (scenario door) | |
| | UL 2818 | Labelling | Greenguard Gold | |
| Emission formaldehyde | EN 16516 | Classification | E1 (≤0.1 ppm) | |
| Declaration of harmlessness Food Safe | EN 1186 / 13130 / CEN/TS 14234 | Contact with food | Approved | |
| Environmental product declaration (EPD/FDES) (6) | ISO 14025 / EN 15804 | Available | Yes | |
| Antibacterial effect | JIS Z 2801/ISO 22196 | Reduction in % | 99.9 | |
| PEFC (7) | | Certification | Upon request | |
| FSC® (7) | | Certification | Upon request | |

(4) Consider details (e.g., Classification report, Official Journal of the European Union); e.g., validity in combination with substrate, adhesive system
(5) CWFT-Certified without further testing – see Official Journal European Union
(6) Environmental product declaration on INIES, IBU and Ecoplatform data basis
(7) Please specify with your order

## 6. STORAGE AND TRANSPORT

POLYREY HPL® must be transported and stored flat, horizontal, with full-surface contact and on a sufficiently large pallet.
POLYREY HPL® panels are not dangerous goods as defined by transport regulations, therefore labeling is not required.
Panels must be stored in a closed storage area under normal indoor conditions (10–30 °C and 40–65% relative humidity), and protected against moisture, and mechanical damage, with suitable protection. The protection placed on top of the pallet must be maintained whenever panels are removed from the stack. If the panels are stored for a long period of time, ensure flat storage, and place a panel on top to weigh on the laminates, otherwise the panels may warp or deform. In case of vertical storage, we recommend an inclined position at 80 degrees with full-surface support and a counter bearing on the floor to prevent slipping.

The panels can be delivered with protective film to ensure a temporary protection during transport, storage and handling.
If the film remains on the surface during processing, it is the processor's responsibility to perform preliminary machinability and this does not in any way dispense with a systematic inspection beforehand.

The protective film must be removed no later than six months after delivery.

## 7. HANDLING AND MACHINING

Before processing, please check the product for damage and visual defects. In order to guarantee the final appearance of our products, it is also imperative to check the color and appearance of the panels in relation to each other (decor/texture). However, slight deviations in decor and texture are inherent to the production process and must be accepted.
Also check that the direction of production is taken into account (sanding direction). The direction of production has an influence on dimensional variation, as well as on mechanical strength and appearance due to light reflection.
Due to the different production technologies used for each product (e.g. POLYREY HPL®, REYSIPUR, PANOPREY and MONOCHROM), there may be slight visual and tactile differences between different product types and formats, even for identical decor/structure combinations.

Due to the product-specific differences in production technologies (e.g., POLYREY HPL®, REYSIPUR®, PANOPREY® and MONOCHROM), even identical decor, structure or core board combinations can result in slight optical and tactile deviations across different product groups and formats.

The usual safety regulations regarding dust removal and fire protection must be observed when processing POLYREY HPL®. Due to possible sharp edges, protective gloves should always be worn when handling POLYREY HPL®. Contact with dust does not cause any issues; nevertheless, there are a limited number of people who may have an allergic reaction to processing dust of all kinds (and therefore also to HPL/Compact HPL dust).

POLYREY HPL® is a wood-based product, and its dimensions are constantly adapting to ambient conditions. The product can be easily process with woodworking machines. For a suitable tool recommendation of your individual machining please contact the tool manufacturer directly.

POLYREY HPL® panels HGP/VGP are postformable.
POLYREY HPL® panels can be cold bended at radius 20 cm for POLYREY HPL® postformable 0,8 mm and 30 cm for POLYREY HPL® standard and fire retardant 0,8 mm.

## 7.1. MANUFACTURING OF BONDED BOARDS

POLYREY HPL® and its substrate must be stacked and conditioned together before processing (≥ 3 days). A good conditioning is achieved in a moderate interior climate (18–25 °C and 40-65% relative humidity). These conditions are also recommended for the location where the product will be later used. If the composite element to be manufactured will be exposed to consistently high or low humidity during its subsequent use, it is advisable to expose the POLYREY HPL® and substrate to a correspondingly high or low level of humidity or increased temperature during conditioning.

The following adhesives can be used to bond POLYREY HPL® to a wood substrate:

| | |
|---|---|
| Dispersion adhesives | e.g., PVAc (polyvinyl acetate) adhesive |
| Condensation resin adhesives | e.g., urea resin adhesives |
| Melt adhesive | e.g., hot melt |
| Contact adhesive | |

The use of the right adhesive is of particular importance from a technical point of view, but also from an allergological and health point of view. If possible, low-pollutant adhesive should be used (such as dispersion adhesives) that evaporate quickly. If technically necessary, all other adhesives can also be used, but longer evaporation times must be observed.

Adhesives require special care during processing and storage. Therefore, the guidelines and processing instructions of the adhesive manufacturer must be observed. Basically, test bonding must be out according to the respective application and requirements for the bonded board.

Tension-free composite elements are most safely produced at press temperatures of 20 °C. Higher press temperatures allow for a reduction in setting time. As the dimensional changes of POLYREY HPL® compared to the substrate are temperature-dependent, press temperatures should not exceed 60 °C to avoid increased tension.

When selecting the right adhesive for POLYREY HPL®, we recommend following the technical advice of the manufacturer / processor.

### 7.2. BACKER

When manufacturing bonded board with POLYREY HPL®, it is especially important to ensure that tension is equalized in the composite element.

We always recommend a symmetrical structure with backing POLYREY HPL® identical to top side POLYREY HPL® (including protective film). This must be considered especially when using self-supporting or non-structural composite elements (e.g., furniture doors) or for POLYREY HPL® with modified core (for example type HGF/VGF).
In addition, the POLYREY HPL® of both sides must be subjected to the same temperature and humidity conditions and should be cut in the same production direction (sanding direction).

In case of structural or non-self-supporting composite elements (e.g., wall cladding) in normal conditions (18-25°C and 40-65% relative humidity), asymmetrical composite elements can be produced using another POLYREY HPL® panel of the same type of core and thickness (Polyrey backer: ref B999). It is recommended that only substrates with a thickness of ≥ 18 mm are used to produce non-symmetrical elements. The correct balancing depends even on the thickness, the usage and the mounting type of POLYREY Bonded Boards.
The production of non-symmetrical elements is the responsibility of the processor. For non-symmetrical composition, we recommend conducting preliminary tests to check feasibility regarding the respective application.

The protective film must be removed simultaneously on both sides.

More information on the handling and machining of POLYREY HPL® can be found in ICDLI HPL Compendium.

## 8. CLEANING AND CARE

POLYREY HPL® surfaces do not require special care due to their homogenic and resistant surface, even too many substances/chemicals (see Chemical resistance data sheet). Surfaces and edges require no further treatment (e.g., with lacquers, paints, oils, waxes etc.), as they are neither corrosive nor oxidized.

For residue-free cleaning of POLYREY HPL® surfaces, these four steps must be followed:

1- Choose the appropriate cleaning aids (cloth/sponge/brush) – depending on the structure and Choose the appropriate cleaning agent/solvent – depending on dirt residues.
2- Clean the surface with the appropriate cleaning aids and cleaning agents/solvents.
3- Rinse of all cleaning agent/solvent with warm water.
4- Dry the surface with a soft cloth after cleaning.

Clean the entire surface without too much “pressure” to avoid polish marks.

Especially matt textures/structures of POLYREY HPL®, it's important to regularly clean the surface according to the above instruction and clean with warm water to avoid the accumulation of dirt and residue of cleaning agent/solvent into the tight structure folding.

In case of stubborn stains and soiling which lay in the depth of the texture/structure, the dirt can be removed with the help of a humid microfiber cloth. Other stubborn stains (e.g., varnish) can be removed with organic solvents (e.g. ethanol, isopropanol, etc.).

Abrasive cleaning aids (e.g. scouring powder, steel wool) must not be used, as these alter the surfaces. At the beginning carry out cleaning tests with each cleaning agent/solvent on non-visible areas.

Strongly staining substances (e.g. wine, coffee, tea, mustard, curcuma) may leave slight stains on the surface of POLYREY HPL® panels. To avoid permanent staining these stains must be removed immediately.

Changes to the surfaces (e.g., micro-scratches, gloss deviations, dirt, grease stains...) caused by daily use are traces of use. The visual perception of these changes is influenced by the decor and surface texture.
In general, it must be observed on glossy and matte, smooth or deep textured surfaces.
The traces of use are more visible on smooth surfaces and are even more emphasized in combination with dark decors.
Deep textured surfaces exposed to repeated rubbing will show visible changes in the peak/elevated areas.

To preserve the visual appearance, these advices must be observed during application and cleaning.

For further information, please refer to the Care Manual available at www.polyrey.com.

## 9. SUSTAINABILITY AND ENVIRONMENT

Polyrey is certified according to EN ISO 14001 and EN ISO 50001.

POLYREY HPL® is a cured, and therefore inert, duroplast. The release of formaldehyde from POLYREY HPL® panels (≤ 0.05 ppm in testing according to EN 16516) are far below the legally permissible level (≤ 0.1 ppm regard to German requirements (Chemikalienverbotsverordnung)).

Furthermore, the emissions of volatile organic compounds (VOC) are so low that, depending on the test scenario, the following classifications according to the French VOC regulation have been given by Eurofins test reports.

**Class A+** (with the test scenario for small areas (e.g., doors) with a loading factor of 0.05 m² / m³)

**Class A** (with the test scenario for walls with a loading factor of 1.0 m² / m³)

POLYREY HPL® is **GREENGUARD GOLD** certified according UL2818 standard.

POLYREY HPL® can come into direct contact with all foods and can safely be used as intended in food processing.

Individual Environmental Product Declaration (EPD) are available. Using clearly defined parameters, it provides quantitative, verified, and objective information about the effects of POLYREY HPL® on the environment and could be used for sustainable building certification. (e.g., LEED, BREEAM). The entire lifecycle of POLYREY HPL® (raw material extraction, production, transport, use, disposal) is taken into consideration.

POLYREY HPL® can be offered as a PEFC- or FSC®-certified product upon request. In addition, all paper used (core paper and decorative paper) comes from non-controversial or controlled sources and meets EUTR Act (EU) No. 995/2010 requirements.

POLYREY HPL® (thickness 0.6mm-1.0mm/except flame-retardant) contains 20% "post-consumer" recycled paper and thus has a recycled content of 20% according to the international standard ISO 14021-2016.

POLYREY HPL® is a product and not a chemical substance, so the REACH ordinance is not applicable. It is, however, important to ensure information exchange between POLYREY and raw material suppliers regarding REACH-relevant components (see REACH ordinance technical data sheet for more information). We hereby confirm that no substance from the Candidate List is used in our above-mentioned products in a quantity requiring information (≤ 0,1% w/w) and that we comply with the requirements of Annexes XIV and XVII of the REACH Regulation.

## 10. DISPOSAL AND ENERGY RECOVERY

POLYREY HPL® can be disposed of at controlled waste disposal facilities (e.g., landfills) that comply with current national and regional regulations. According to the regulation on the European Waste Catalog, POLYREY HPL® waste is classified with the code 200301 (mixed municipal waste) or code 03 01 05 (wood waste).

POLYREY HPL® is particularly suitable for thermal recycling due to its high calorific value (18–20 MJ/kg). When completely combusted at 700 °C, the boards burn to water, carbon dioxide and nitrogen oxides. The conditions for good combustion are met in modern, officially approved industrial incineration facilities. The ashes from these incineration processes can be brought to controlled landfills.